Memorandum

Date: March 16, 2012

To: Matt Francis, Sr. Project Manager, Environmental Restoration, LLC (ER)

From: Andy Paddock, P.E. , URS Structural Engineer

Subject: **Eaton Sugar Beet Factory, Structural Recommendations**

URS was asked to meet with ER staff at the project site on March 15, 2012 and to provide structural assistance with the assessment of the existing roof structure, where ER personnel had previously stepped through existing wood decking.

Since URS did not have the HAZWOPER safety training required to enter the structure, Mike Sulka, ER mechanical engineer, relayed information to URS in the form of existing drawings, photographs, sketches, and verbal descriptions.

Due to the nearly 110 year old structures condition, a full depth analytical assessment and structural evaluation/analysis of the roof structure was deemed impractical. This conclusion was reached based on the level of existing information available along with the project's schedule and duration. URS understands that the goal is to provide some "level of confidence" that the existing roof structure is "safe enough" to continue with planned asbestos abatement work.

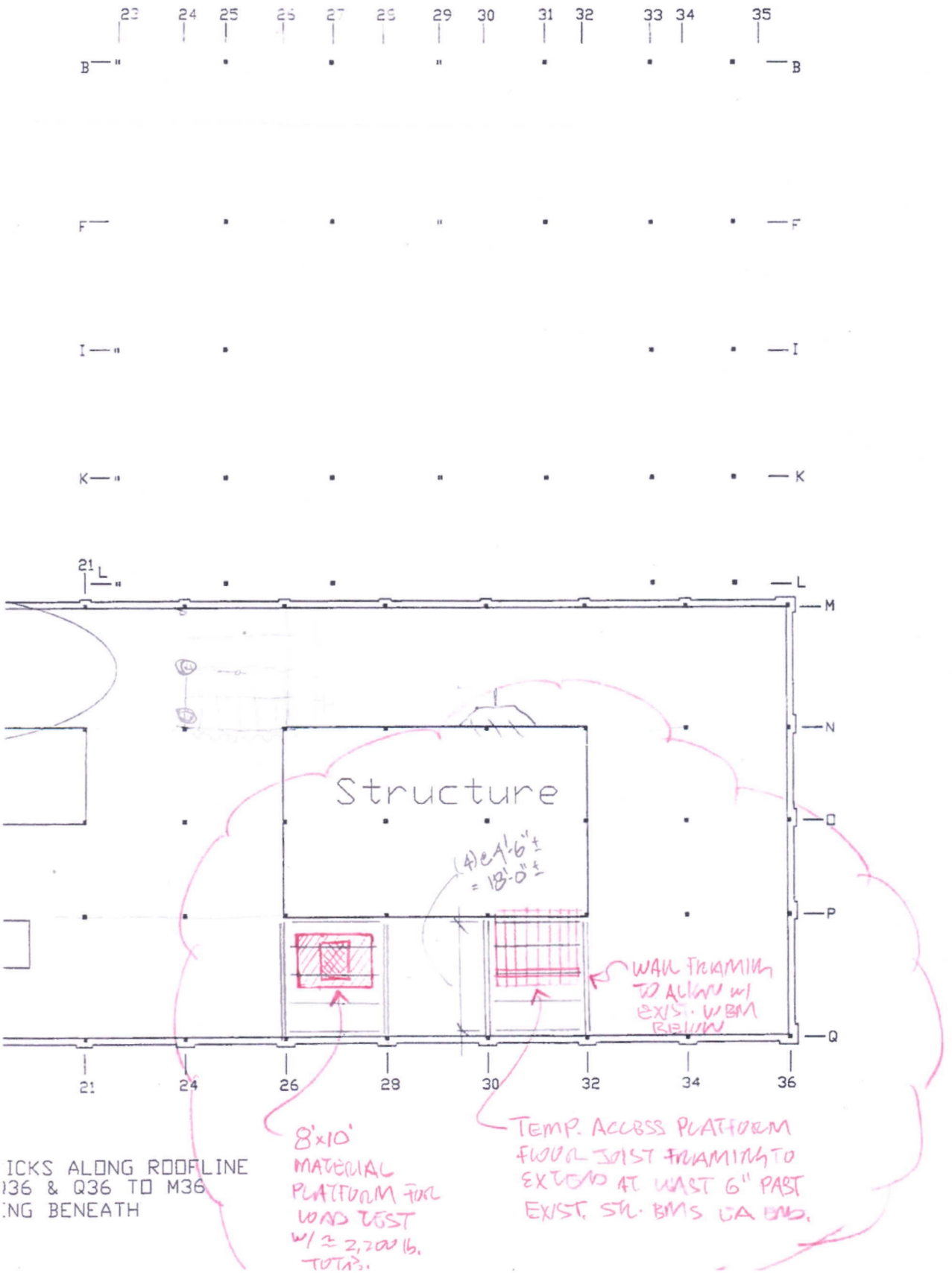
In lieu of an analytical analysis URS recommended a "load test" of the existing roof. This type of empirical analysis could quickly provide the level of confidence needed by ER to construct temporary access platforms and continue work. Below is a summary of URS's load test and access platform construction recommendations:

- Typical bays of existing roof are nominally 14' wide x 18' long and consist of two (2) 18' long girders which support five (5) 14' long roof beams.
- The approximate capacity of these existing steel roof beams was checked and they appear to be capable of supporting the estimated construction load of between 2,000 to 3,000 pounds, when uniformly distributed over an area 14' wide and 10' long.
- Load testing should occur at each of these typical roof framing "bays" and should uniformly apply the anticipated construction load over at least two (2) of the three (3) steel roof beams expected to support the temporary access platforms.
- Load testing durations should be on the order of 30 seconds to a minute for each bay with careful attention being paid by the crane operator to the slack or tension applied to the cable during testing as this will be an indicator of the roofs capacity.

- The new temporary access platform framing should follow standard wood framing convention and use Hem Fir No 2 or better lumber. Roof joists = 2x6 @ 24" o.c., wall studs = 2x6 @ 24" o.c. or 2x4 @ 16" o.c., floor joists = 2x6 @ 24" o.c. or 2x4 @ 16" o.c. wall, and roof sheathing shall be at least 7/16" OSB and floor sheathing shall be 23/32" OSB if joists are 24" o.c. or 5/8" if joists are 16" o.c.
- Uplift connections between existing steel roof framing and the new access platform could consist of either 3/16" diameter cable or Simpson CS22 coil strap through 3/8" diameter holes in the center of the floor joists, through the existing wood roof decking and wrap around the existing steel roof framing. These connections, or equivalent connections, should occur at each steel beam at 48" o.c.

See the attached sketch for a graphical depiction of the general framing configurations referenced above.

cc: Nate Williams, Geologist, URS
Jeremiah Ervin, Senior Environmental Scientist, URS
Peter Stevenson, EPA



Smith Geotechnical ENGINEERING CONSULTANTS

FOURTH FLOOR PLAN

EATON SUGAR MILL

SCALE: 1" = 20'

PROJ. #: 03.038

DATE: 12/11/03

DRAWN: ME

APPVD: DS